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DEVELOPING SYNTACTIC CONTROL IN SEVENTH GRADE WRITING THROUGH
AUDIO-LINGUAL DRILL ON TRANSFORMATIONS.

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AN ANALYSIS OF "T-UNITS" (THE MINIMAL TERMINABLE SYNTACTIC UNITS ALLOWED BY THE GRAMMAR OF ENGLISH), AS FOUND IN CHILDREN'S WRITING, IS A MORE SENSITIVE MEASURE OF GROWTH OF SYNTACTIC SKILL THAN TRADITIONAL CRITERIA. HUNT'S 1965 COMPARATIVE ANALYSIS OF CLASSROOM WRITING OF FOURTH-, EIGHTH-, AND 12TH-GRADE CHILDREN, AND OF MAGAZINE ARTICLE WRITING OF ADULTS, SHOWED AN INCREASE IN THE MEAN WORD LENGTH OF T-UNITS WITH EACH AGE ADVANCE THROUGH AN INCREASED USE OF SUBORDINATE CLAUSES AND, MORE IMPORTANTLY, SENTENCE-COMBINING TRANSFORMATIONS. NEY'S EXPERIMENTAL ATTEMPTS (1965) TO DEVELOP CHILDREN'S SKILL IN PRODUCING SENTENCE-COMBINING TRANSFORMATIONS THROUGH SYSTEMATIC AUDIOLINGUAL DRILL GAVE GROUP RESULTS BELOW THE .05 LEVEL OF SIGNIFICANCE, ALTHOUGH SOME STUDENTS MADE IMPRESSIVE INDIVIDUAL GAINS. FURTHER PRE- AND POST-TESTING BY DONNA KAY RAUB (1965) WITH SEVENTH GRADERS, USING A FILM WITH ACCOMPANYING NARRATION, SHOWED NO STATISTICALLY SIGNIFICANT DIFFERENCE IN THE WRITTEN COMPOSITIONS. HOWEVER, SCORES ON MEAN LENGTH OF T-UNITS NARROWLY MISSED STATISTICAL SIGNIFICANCE, AND SCORES ON THE NUMBER OF SENTENCE-COMBINING TRANSFORMATIONS PER T-UNIT SHOWED THE DIFFERENTIAL GAINS OF THE EXPERIMENTAL GROUP TO BE SIGNIFICANT AT THE .05 LEVEL. THIS PAPER WAS PRESENTED TO THE AMERICAN EDUCATIONAL RESEARCH ASSOCIATION (NEW YORK CITY, FEBRUARY 18, 1967). (AMM)

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Developing Syntactic Control in Seventh Grade Writing
Through Audio-Lingual Drill on Transformations *

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Appropriate exploitation of the syntactic resources of the language is obviously one of the proper goals in development of skill in writing. Precisely what constitutes appropriateness under particular circumstances, of course, will always be debatable; no a priori account can describe in detail the syntactic characteristics of a piece of good writing. Certain general characteristics, however, can be predicted as syntactic features distinguishing the writing of elementary school children who are more mature from that of those who are less so. Traditionally, observations on this subject have stressed the lengthening of sentences and increasing use of subordinate clauses as indicators of progress toward maturity in writing. Many such observations are summarized by McCarthy (1954). More recently, normative studies have further specified syntactic characteristics that set apart the writing of older (presumably more skillful) children from that of their younger (presumably more naive) contemporaries.

Hunt (1965) and O'Donnell, Griffin, and Norris (1967) have shown that, at least in narrative and expository writing, one regular development in the

* Paper read at AERA, New York City, February 18, 1967. The first experiment reported here was carried out by James W. Ney, of the English Language Center, Michigan State University; the second was conducted by Donna Kay Raub under supervision of William J. Griffin, as a project of the Institute on School Learning, George Peabody College for Teachers. In both instances, Raymond C. Norris was the consultant on design and statistical treatment. Both experiments were supported in part by funds granted by the Carnegie Corporation of New York. The investigators and the writer of this paper are solely responsible for statements made and views expressed in reports of the experiments.

upper grades (apparently beginning about Grade 6 or 7) is a reduction in the relative frequency of main-clause coordination. This fact makes it clear that "sentence length" as ordinarily defined is not a very sensitive measure of growth of syntactic skill. Coordinate conjunction of main clauses may produce very long "compound sentences," but such compounding is more characteristic of younger than of older children. Hunt, therefore, chose to analyze children's writing in terms of units of single independent predications with whatever subordinate clauses were grammatically attached to them. These he called T-units, because they are the minimal terminable syntactic units allowed by the grammar of English.

Hunt (1965) found in a comparative analysis of classroom writing by children in Grades 4, 8, and 12 and of writing in articles published by adults in Harper's and The Atlantic that there was a consistent and statistically significant increase in the mean word-length of T-units with each age advance in the groups studied.¹ More important, perhaps, is his observation that the lengthening of T-units resulted not only from increased use of subordinate clauses but, more strikingly, from employment of constructions that may be described as generalized or sentence-combining transformations. Thus, a younger child might write, "The hunter saw a bird. The bird was red. It was in a tree. The tree was an evergreen." An older child would be more apt to write, "The hunter saw a red bird in an evergreen tree." Hunt's findings were thoroughly corroborated by O'Donnell, Griffin, and Norris (1967) in their study of syntax in the writing of children in Grades 3, 5, and 7.

1. Hunt (1966) later demonstrated that the length of T-units also reflects children's general intelligence. The school-age subjects of his first study (1965) were children with average IQ's. An examination of writing by superior twelfth graders showed the mean length of their T-units to be much greater than that of their less gifted contemporaries.

Can we accelerate children's acquisition of skill in producing sentence-combining transformations by special instructional techniques in the classroom? No doubt, there are numerous ways of doing so. To James W. Ney, long successful in directing pattern-practice in teaching English to speakers of other languages, it seemed likely that one productive method would be to provide systematic audio-lingual drill in producing syntactic transformations. Ney (1966, p. 895) observed that "the spoken language which the students habitually use differs from formal written English both in structure and vocabulary." He hypothesized that if oral practice in producing transformations is given under circumstances that make the drill interesting and meaningful, effects will be transferred to the children's writing.

In the summer of 1965, Ney provided such training during one hour each school day for four weeks to a group of 19 seventh graders of better than average intelligence at the Peabody Demonstration School in Nashville, Tennessee. Subjects were given identical pretest and posttest assignments--the task of writing (within 25 minutes) a report of their viewing of a silent movie ("The Hunter and the Forest," Encyclopedia Britannica Film, No. 878). Results of the experiment were to be judged by analysis of the syntax of pretest and posttest compositions. Since two subjects did not take both tests, data reported reflects the behavior of only 17 students.

Training was based on Stephen Crane's story, "The Open Boat." In the course of the month, the entire story was read aloud by the class, usually in unison following a model reading by the instructor. The instructor identified sentence-combining transformations in Crane's writing, explained how they were (or might have been) produced, and then led the class repeatedly through the oral process of building similar syntactic

structures from sets of cue sentences orally presented. Thus, fifteen types of transformations assumed to be uncommon in the children's ordinary speech were practiced in the training sessions, each of which ended in an assignment requiring written transformations of the type studied that day. Written work was based on five or six sets of cue sentences read by the instructor.² No direct instruction, of course, was given in the writing of such reports as were to be produced in the post tests.

The experimental plan designated as the critical measure of effects of training a comparison of the total numbers of the drilled structures in pretests and posttests. Such structures were used 57 times in the student compositions written before training and 79 times in posttest writing. While a t value of 1.75 was required for statistical significance at the .05 level, the obtained data yielded a t value of only 1.72.

Aside from the narrow margin by which the gain of the whole group missed significance at the .05 level, other features of measured results suggest the possible fruitfulness of such an experiment. For one thing, six of the 17 students tested showed very impressive gains in the use of the drilled structures, their subgroup increase being from 20 to 49. Of further interest is the fact that the same six students used about the same number of clauses in simple and compound sentences in pretest and posttest compositions (42 and 40 respectively), but their gain in the number of clauses used in complex sentences was from 38 to 67. (The class as a whole made no gain in this respect).

2. As might be expected, daily sessions involved some vocabulary work and attention to spelling, and they included reviews of recent oral drills. A more detailed account of training procedures can be found in the published report by Ney (1966).

To test further the potential of such training, a similar but somewhat more ambitious experiment was undertaken by Donna Kay Raub in the spring of 1966.³ Twelve experimental subjects were drawn from a late morning English class of seventh graders at the Peabody Demonstration School, while an early morning English class of 25 seventh graders at the same school was regarded as a control group. Experimental subjects were selected from the total late morning class by choosing students whose T-units had the lowest mean length in a composition all students wrote on the same topic before the experiment began. The mean IQ of experimental subjects was 107.6; that of the control group was 113.8.

In this second experiment, the audio-lingual training was planned to cover eight weeks, providing practice on 23 types of syntactic structures, all except the passive construction being explainable as formed from sentence-combining transformations. Drill was tied to the oral reading of The Red Pony and The Pearl by John Steinbeck. Variations from procedure of the first experiment allowed individual oral reading in class, particularly of dialog passages, and student reading into a tape recorder with subsequent playback. Some oral analysis of generalized transformations supplemented the more frequent drills in synthesizing sentences. In addition to the daily writing of some half a dozen sentences exemplifying transformations of immediate concern, experimental subjects also, in the course of eight weeks, wrote six brief compositions relating to their reading. On occasion, they were asked to rewrite compositions produced earlier, making use of transformations they had more recently practiced. A similar exercise was provided by the re-writing of passages from pre-primer reading texts. Some attention was given to vocabulary and spelling.

3. A partial report and interpretation of results of the experiment has been presented by Raub (1966).

During the eight weeks of the experiment, the control group was instructed by its regular teacher in her normal manner. The students all read the Steinbeck stories, but as outside assignments. The stories were discussed in class, and they were the basis of writing assignments relating to their themes, structure, and characters. The students also did a good deal of additional writing of descriptive sentences and paragraphs. They reviewed figurative expression, and they had exercises in using specific, vivid details. They worked in the traditional fashion with compound subjects and verbs, and with the use of subordinate clauses; they did a good deal of correcting of defective sentences. They also had vocabulary work based in part on their reading and in part on a vocabulary building textbook.

The pretest and posttest given experimental subjects and the controls were identical assignments soliciting reports and comments on two eight-minute cartoon film adaptations of Aesop's fables, viewed on two separate days at the beginning and at the end of the training period. "The North Wind and the Sun," a Coronet film, was shown with accompanying narrative and dialog; the Coronet film called "The Ant and the Dove" was shown with the sound track turned off. Measures selected as indicators of training effects were the mean word-lengths of T-units and the mean numbers of sentence-combining transformations (of all types) per T-unit in pretests and posttests. Comparisons were made between experimental subjects and the controls as whole groups and also between members of seven pairs of experimental subjects and controls matched on the basis of close similarity in mean length of T-units in three compositions written before the training began. Analyses were also applied to discover any group variation in the distribution of sentence-combining transformations among nominal structures, adverbial structures, and structures of coordination within T-units.

Sharply contrasting results were obtained from the comparison of pretest and posttest performance in the two distinct sets of circumstances provided in those tests. Neither in mean length of T-units nor in the relative number of transformations was a statistically significant difference found in compositions written by experimental subjects and controls on the film shown with accompanying narration. But in composition relating to the silent film, chi squares computed for gain scores on mean length of T-units narrowly missed statistical significance, and chi squares for gain scores on the number of sentence-combining transformations per T-unit showed the differential gain of the experimental group to be significant at the .05 level. A reasonable interpretation of these results appears to be that the audio-lingual drill did have transferred effects on the writing of experimental subjects, but that the influence of immediate recall contaminates testing of the sort employed in this experiment.

As in the first experiment reported here, measured results varied widely with individuals. In compositions relating to the silent film, gain scores for experimental subjects ranged from +5.458 to -3.062 on the mean number of words per T-unit, and from +1.357 to -1.076 on the mean number of sentence-combining transformations per ^TT-unit. The same variability is shown by a study of the behavior of the matched pairs. When gain scores of experimental subjects and their control counterparts on the "Ant and the Dove" compositions were summed, results favored experimental subjects in three instances and in three instances favored the controls.⁴ Considering compositions relating to both films, gain score sums were positive for both length of T-units and transformations per T-unit, but computed t's for the gain scores were not significant at the .05 level except in the mean number of transformations per T-unit in compositions elicited by the film shown with the sound track operating. This

4. The control member of one matched pair did not take the posttest relating to the silent film (though he took the other posttest), so results reported at this point reflect the behavior of only six pairs.

fact probably indicates that pretraining measurement of T-unit length is not a dependable predictor of which individuals will or will not profit from audio-lingual drill such as is described here.

Median tests were applied to computations of the proportions of sentence-combining transformations found in nominal structures, in adverbial structures, and in coordinated structures within T-units. Only in pretest compositions relating to the film run with the sound track operating was any statistically significant difference found in the proportional distributions in writing of the experimental and control groups. In those compositions, significant differences were observed in all three types of structures studied. Remembering that the experimental subjects had a lower mean IQ than the controls, and that they were chosen because their pretraining writing exhibited syntactic features that were taken to be relatively immature, we may speculate that the distributional distinctions noted here show differential effects of immediate recall on contrasting groups of children. The fact that posttest compositions showed no such distributional differences in syntactic structures indicates that at the end of the training period the writing habits of the two groups under conditions allowing immediate recall were more nearly alike. As for gain scores, significant shifts were found only in the proportions of transformations in nominal structures: the control group significantly increased the proportion of transformed nominals in compositions on the film shown with narration and dialog; the experimental group produced a significantly increased proportion of transformed nominals in compositions relating to the silent film.

Subjectively identified incidental effects of the training involved in this experiment were development of the children's vocabulary, improvement in oral reading, and increase in attention span. No doubt experimental designs

can be developed to measure such putative benefits, as well as to investigate possibilities of diagnostic identification of the types of individuals likely to profit most from audio-lingual drill on syntactic transformations. It also remains to be seen whether such drill would have desirable results at earlier grade levels. The probability that it may is indicated in a preliminary report by Ney (1967), which shows that audio-lingual drill in the fourth grade has produced statistically significant posttest increases both in fluency and in the use of drilled structures.

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APPENDIXES

I. Types of syntactic transformations drilled in Experiment II.
 (Asterisks indicate the types drilled in Experiment I.)

1. Embedding the adjective clause to modify a direct object. *
2. Embedding the adjective clause to modify a subject. *
3. Deleting the WH-word and be from the adjective clause with an --ING-form to produce a modifier of a nominal in the subject position. *
4. Deleting the WH-word and be from the adjective clause with an --ING-form to produce a modifier of a nominal in the object position. *
5. The passive transformation (introduced as the basis for the transformation described in 6). *
6. Deleting the WH-word and be from the adjective clause with --EN-form to produce a modifier of a nominal in the object position. *
7. Deleting the WH-word and be from the adjective clause with --EN-form to produce a modifier of a nominal in the subject position. *
8. Deleting the WH-word and be from the adjective clause with adverb of location to form modifier of a noun in a subject position. *
9. Deletion as in 8 to form modifier of a noun in the object or complement position. *
10. Producing adverbial clauses as sentence openers, using subordinators while and when. *
11. Producing adverbial clauses as sentence openers, using subordinator although.
12. Producing adverbial clauses as sentence openers, using subordinators because and since. *
13. Producing adverbial clauses as sentence openers, using subordinators after or before. *
14. Producing adverbial clauses as sentence openers, using subordinator unless. *
15. Producing adverbial clauses as sentence openers, using subordinators as or as soon as. *
16. Deletions in kernel sentences containing verb phrases, with use of the remaining main verb form as modifier of a nominal.
17. Deletions in kernel sentences leaving a noun to be used as adjunct modifier of another nominal.

APPENDIXES (Cont'd)

18. Deletions in kernel sentences leaving a prepositional phrase to be used as modifier of a nominal.
19. Transformations producing parallel constructions within T-units.
20. Transformations producing participial phrases in nominal positions.
21. Transformations producing infinitive phrases in nominal positions.
22. Producing indefinite relative clauses and using them as subjects.
23. Producing indefinite relative clauses and using them as objects and complements.

TABLE 1

CHI SQUARE VALUES FOR PERCENTAGES OF EXPERIMENTAL AND CONTROL SUBJECTS
ABOVE A COMMON MEDIAN ON PRETEST-POSTTEST GAIN SCORES

Stimulus Film	Words per T-unit	Transformations per T-unit	Critical Value at .05 level
"The North Wind and the Sun" (with sound)	2.348	2.348	3.8
"The Ant and the Dove" (silent)	3.358	6.584	3.8

TABLE 2

PERCENTAGES OF EXPERIMENTAL AND CONTROL SUBJECTS ABOVE A
COMMON MEDIAN ON PRETEST-POSTTEST GAIN SCORES

Stimulus Film	Words per T-unit		Transformations per T-unit	
	Exp. Ss	Controls	Exp. Ss	Controls
"The Ant and the Dove"	.727	.391	.818	.348

TABLE 3

STUDENT t VALUE FOR DIFFERENCES IN MEAN GAINS BY MATCHED
EXPERIMENTAL AND CONTROL SUBJECTS

Stimulus Film	Words per T-unit	Transformations per T-unit	Critical Value at .05 level
"The North Wind and the Sun" (with sound)	.489	2.54	1.94
"The Ant and the Dove" (silent)	1.352	.499	2.02